

Clase 7 11 Marzo 2021

Título de la nota

11/03/2021

Unidades
de
concentración

{
% m/m
% m/v
% v/v
v:v
ppm, ppb, ppt

$$\cdot \%. m/m = \frac{m_2}{m_{total}} \times 100$$

$$\cdot \%. m/v = \frac{m_2}{100 \text{ mL Dis}} \times 100$$

$$\cdot \%. v/v = \frac{V_2}{V_{total}} \times 100$$

$$\begin{array}{l} V_2 : V_1 \\ 100 : 100 \\ 1 : 1 \end{array}$$

$$V = f(T)$$

$$\theta \text{ ppm} = \frac{m g_r}{L \sin \text{Disp}}$$

$$Ppb = \frac{Mg^2}{1 L Disp}$$

$$Ppt = \frac{ng^2}{1 L Disp}$$

Molaridad (M) (C)

$$= \frac{n_2}{L \text{ Disp.}}$$

$$= \frac{n_2}{1 \text{ dm}^3 \text{ Disp.}}$$

$$1 \text{ d} = 10 \text{ cm} \quad 1 \text{ dm}^3 = (10 \text{ cm})^3$$

$$1 \text{ L} = 1000 \text{ cm}^3$$

Molalidad = (m)

$$= \frac{n_2}{kg_1}$$

Normalidad = (N)

$$= \frac{eq_2}{L \text{ Disp.}}$$

$$\text{Formalidad} = (F)$$
$$= \frac{UF_2}{L \text{ DISP.}}$$

Formalidad { electrolitos)

Molaridad { no electrolitos)

$$\text{Osmolaridad} = (\text{Osm}) = \frac{\text{Osmol/L}}{\text{L soln.}}$$

| electrolitos

| no electrolitos

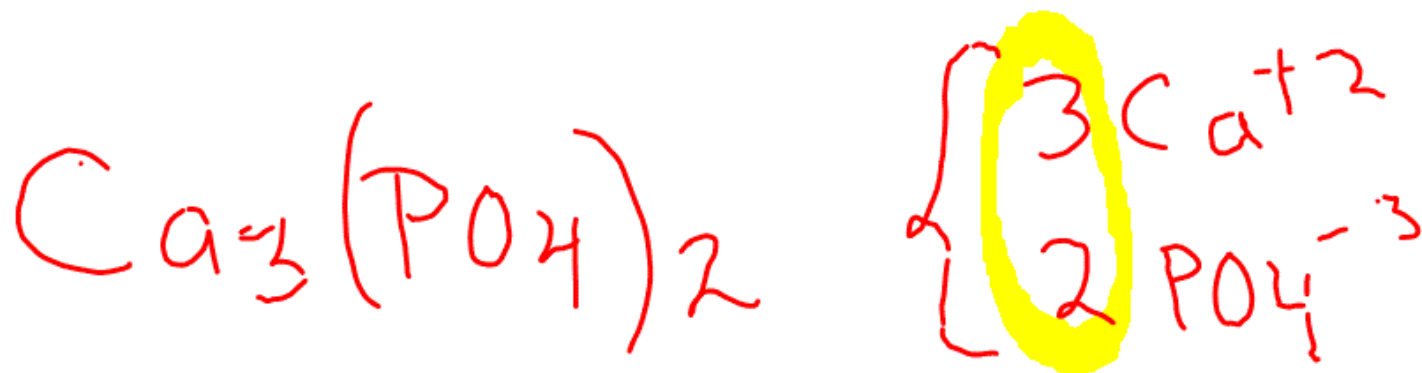
$$\text{Osmolalidad} = (\text{Osm}) = \frac{\text{Osmol/L}}{\text{kg}}$$



2 osmoles



$$0.1 \text{ M} = 0.2 \text{ Osm}$$



$$0.1 \text{ M} = 0.5 \text{ Osm}$$

$$0.05 \text{ m} = 0.25 \text{ Osm}$$

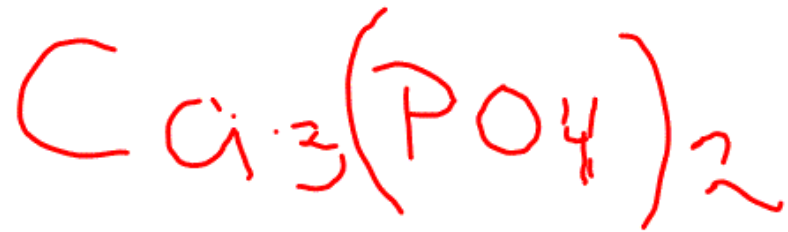
equivalente químico



$$\text{P eq H}_2\text{SO}_4 = \frac{M_{\text{H}_2\text{SO}_4}}{2\text{H}^+}$$

$$= \frac{M_{\text{H}_2\text{SO}_4}}{\# \text{cargas } +} = \frac{M_{\text{H}_2\text{SO}_4}}{2}$$

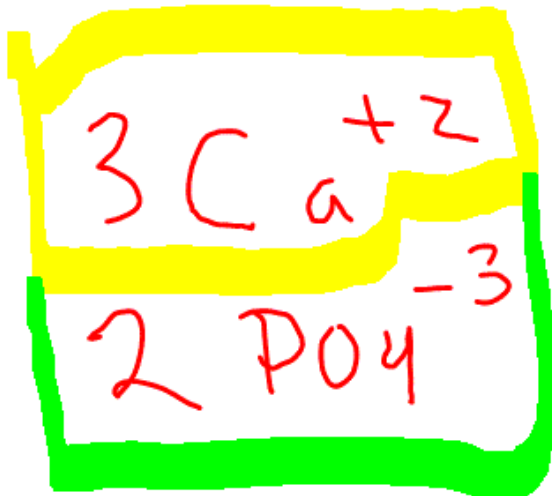
$$\begin{aligned} \boxed{\text{Peq H}_2\text{SO}_4} &= \frac{M \text{H}_2\text{SO}_4}{2} = \boxed{\text{g/eq}} \\ &= \frac{\text{g/mol}}{2 \text{ eq/mol}} \\ &= \text{g/eq} \end{aligned}$$



$$M = \frac{310 \text{ g}}{\text{mol}}$$

$$\text{Peg } \text{Ca}_3(\text{PO}_4)_2 = \frac{M}{6} = \frac{310}{6}$$

$$= 51.67 \text{ g/peg}$$



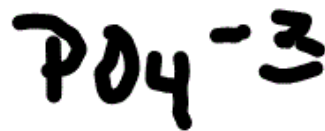
$$\begin{aligned} \text{peq Ca}^{+2} &= \frac{3 \text{ pa Ca}^{+2}}{6} \\ &= \frac{\text{pa Ca}^{+2}}{2} \\ &= \frac{40}{2} = 20 \text{ g/eq} \end{aligned}$$

$$\text{req. } \text{PO}_4^{-3} = \frac{2 \text{PO}_4^{-3}}{6}$$

$$= \frac{1 \text{PO}_4^{-3}}{3}$$

$$= \frac{95 \text{g}}{3}$$

$$= 31.67 \text{ g/eq}$$



$$20 \text{ g/eq} + 31.67 \text{ g/eq}$$





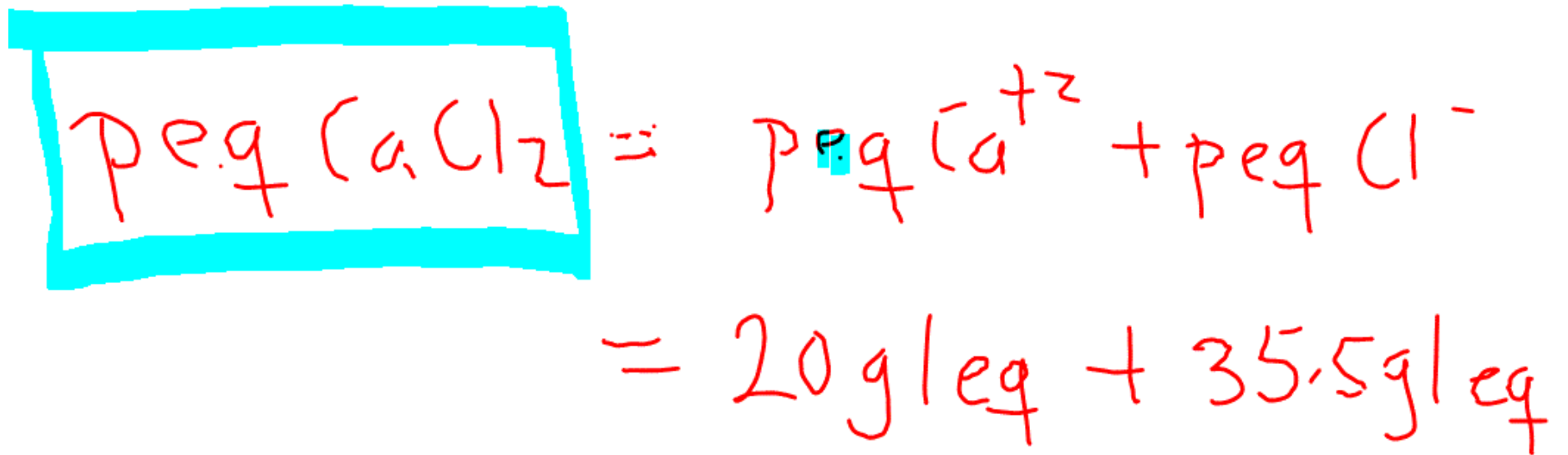
$$\begin{aligned} \text{Peg CaCl}_2 &= \frac{M \text{ CaCl}_2}{2} \\ &= \frac{111}{2} = \frac{55.5 \text{ g}}{\text{eq}} \end{aligned}$$

$$p_{eq} Ca^{+2} = \frac{p \cdot a Ca^{+2}}{2}$$

$$= \frac{40g}{2 eq} = 20g/eq$$

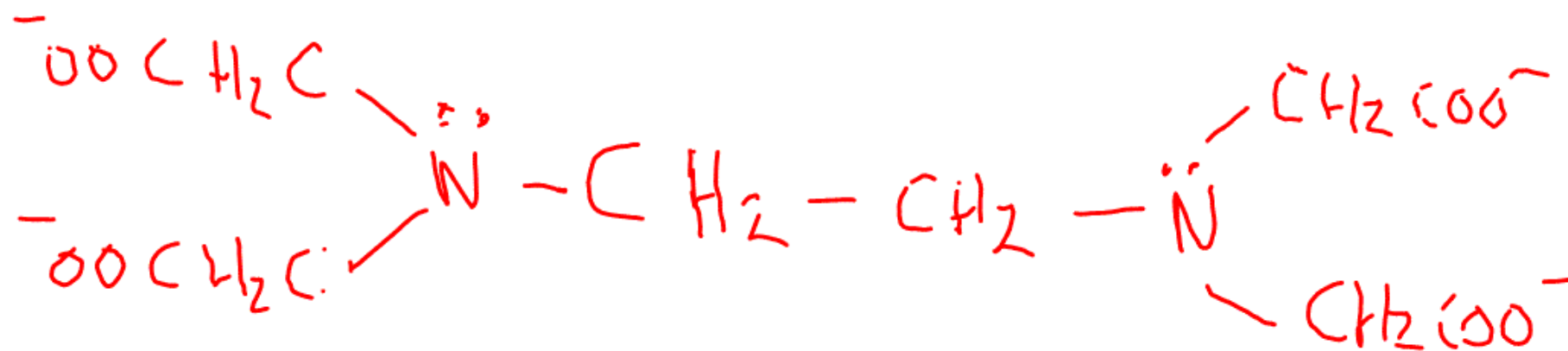
$$p_{eq} Cl^{-} = \frac{2 p \cdot a Cl^{-}}{2}$$

$$= \frac{p \cdot a \cdot Cl^{-}}{1} = \frac{35.5g}{eq}$$



$$\boxed{= \frac{55.5 \text{ g}}{\text{eq}}}$$

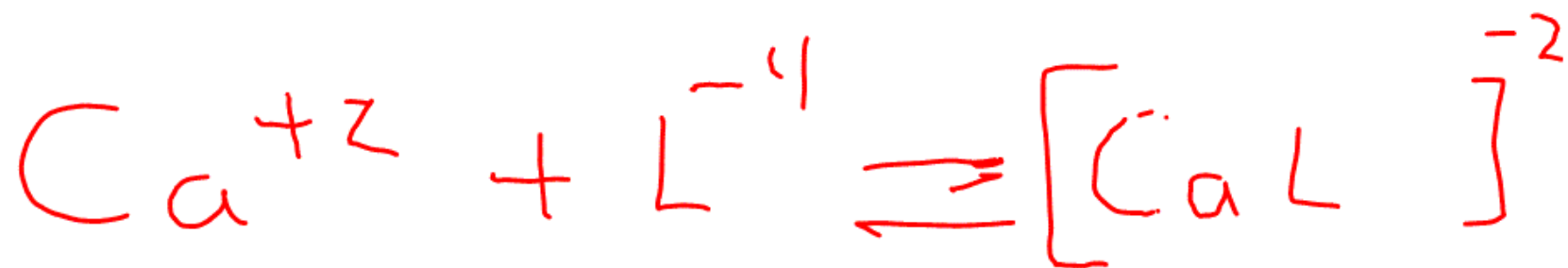
AEDTA



Al⁺³

Ca⁺²

Mg⁺²





$$\text{peq} = \frac{M \text{ MnO}_4^-}{1}$$



$$\text{peq MnO}_4^- = \frac{M \text{ MnO}_4^-}{5}$$

¿ Cuantos mL de H_2SO_4 concentrado
son necesarios para preparar
500 mL de 0.5 N

$H_2SO_4 = 96\%$ pureza

$f = 1.8 \text{ g/mL}$

$M = 98 \text{ g/mol}$

$$\begin{aligned}
 \text{mL} &= \left(\frac{0.5 \text{ eq}}{\cancel{\text{L}}} \right) \left(\cancel{0.5 \text{ L}} \right) \left(\frac{19 \text{ g}}{\cancel{\text{eq}}} \right) \left(\frac{1}{\cancel{1.8 \text{ g}} \text{ mL}} \right) \left(\frac{100}{96} \right) \\
 &= 7.08 \text{ mL}
 \end{aligned}$$

$$\begin{aligned}
 V(\text{mL}) &= N \times V \times \text{peq}_2 \times \frac{1}{\rho} \times \frac{100}{\text{Pur}} \\
 &= (N)(V)(\text{peq}) \left(\frac{1}{\rho} \right) \left(\frac{100}{\text{Pur}_{34}} \right)
 \end{aligned}$$

$$V(\text{mL}) = M \times V \times M_{\text{m}} \times \frac{1}{\rho} \times \frac{100}{\text{porcentaje}}$$

$$= \left(\frac{\cancel{\text{mol}}}{\cancel{\text{L}}} \right) (\cancel{\text{L}}) \left(\frac{\cancel{\text{g}}}{\cancel{\text{mol}}} \right) \left(\frac{1}{\cancel{\text{g/mL}}} \right) \left(\frac{100}{\text{porcentaje}} \right)$$

$$= \text{mL}$$

$$\begin{aligned} m(g) &= N \times V \times \text{peq}_i \times \frac{100}{\text{pureza}} \\ &= \left(\frac{\cancel{\text{eq}}}{\cancel{\text{L}}} \right) (\cancel{\text{L}}) \left(\frac{\text{g}}{\cancel{\text{eq}}} \right) \left(\frac{100}{\text{pureza}} \right) \\ &= \text{g} \end{aligned}$$

$$X_2 \rightarrow m$$

$$X_2 = \frac{n_2}{n_{\text{total}}} = \frac{n_2}{n_2 + n_1}$$

$$m = \frac{n_2}{\text{kg}}$$

$$n_2 = m \text{ kg}$$

$$X_2 = \frac{m \text{ kg}_1}{m \text{ kg}_1 + n_1}$$

$$n_1 = \frac{1000g}{M_1}$$

$$X_2 = \frac{m \text{ kg}_1}{m \text{ kg}_1 + \frac{1000g}{M_1}}$$